

## CONCEPT REVIEW

**Contract Title:** Research on the Inhalation Toxicology  
of Environmental Chemicals

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### Objectives

The purpose of this contract is to provide research support in inhalation toxicology for the National Toxicology Program (NTP) and the Division of Intramural Research (DIR) at NIEHS. The contract will provide an inhalation exposure facility and staff dedicated exclusively to the support of NTP and DIR studies. The facility will be located in close proximity to the main NIEHS campus, and will provide on-site space for the Respiratory Toxicology Group.

### Background and Concept Statement

Inhalation exposure to environmental and occupational toxicants is a major contributing factor to human health problems. Although inhalation is one of the most common routes of human exposure to environmental chemicals, it is one of the most technically difficult and resource intensive routes of dosing experimental animals. Unlike other routes of exposure, inhalation requires a facility with specially designed air handling capabilities, gas, vapor and aerosol generation and monitoring equipment, exposure chambers, and considerable engineering expertise. Because neither the expertise nor the facility is available at the NIEHS, inhalation studies must be conducted using a contract mechanism.

The inhalation contract is utilized by the NTP to characterize the uptake and elimination kinetics of inhaled chemicals, to conduct nonstandard subchronic inhalation studies, to investigate mechanisms of toxicity, and to confirm or investigate unusual findings from previous inhalation studies. The inhalation contract also is required to support the increasing need for inhalation capability by DIR investigators. The studies conducted under this contract for DIR require a high degree of flexibility in scheduling and technical design, and continuous interaction with DIR scientists. The geographic location of the facility close to NIEHS facilitates the direct participation of DIR investigators in the studies and provides the opportunity to utilize the considerable expertise and technical resources available at the NIEHS, EPA and area universities. The Respiratory Toxicology group utilizes this contract to investigate the cellular and molecular mechanisms of chemical-induced respiratory disease, and to develop animal models of human respiratory disease.

**Proposed Changes in Statement of Work**

The Statement of Work has been revised to accommodate the significantly increased utilization of the inhalation facility. The revised Statement of Work specifies a significant increase in space for housing and maintaining large numbers of genetically modified mice. Space designated for performing inhalation exposures, necropsies and other animal procedures also was increased because of the increasing number of DIR investigators using the facility. In addition, the revised Statement of Work stipulates that a number of services and supplies currently provided by the government will be the responsibility of the contractor.